

PowerPC-based Nodes

Plan for local station/IRM replacement

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The local station/IRM system is being upgraded from the Motorola 68K to the PowerPC platform, using the Motorola MVME-2401 CPU board. This board has slots for mounting two PMC mezzanine cards. These two slots will be populated with two particular commercial PMC boards—a Model MM6180-P 2MB nonvolatile memory card from Micro Memory, Inc, and a Model 2372 "96-Channel Reconfigurable Digital I/O" card from Technobox, Inc. The latter includes an Altera FLEX 10K70 FPGA that is automatically configured from a user-configurable PROM at power-up. It can support Tevatron clock decoding and interrupt generation. Although it includes support for 96 digital I/O lines, these may not be needed in our standard configuration. The non-volatile memory card will be used to house various system software configuration tables whose contents must be retained across a power outage.

The first use of the new configuration is to support upgraded Linac controls. The present Linac controls are based upon the older MVME-133 CPU board, with an accompanying 1MB non-volatile memory board, token ring network board, arcnet interface board, and a Crate Utility board that provides many common functions needed by those systems, including interface to a simple CRT display that supports Linac local control access. The upgraded systems will use the MVME-2401 board described above, with the arcnet interface board and Crate Utility board. The 1MB non-volatile memory board and token ring network board can both be retired.

Another use of the PowerPC-based systems is as an improved version of the IRM. The present IRM systems use the MVME-162 CPU board that includes four slots (a–d) for IndustryPack cards. Slot b is used for the Digital IP card, which is required and includes Tevatron clock decoding. Slot d is normally used for the Analog IP card. Each of these cards is interfaced via "out" boards to user digital and analog I/O connectors on the rear of the 3U-size IRM rack-mountable crate. Slots a and c are available for additional IP cards, such as 8-channel timers or 8-channel swift digitizers. For the upgraded systems, using the same configuration of PMC cards on the MVME-2401, an IP carrier board is required, which means that two of the available three VME slots will be used in the IRM box. The IP carrier board will permit the addition of any of the IndustryPack boards. The same slot conventions will be used, since that is determined by ribbon cable routing to the "out" boards within the IRM box. But it may be that the Digital IP card will not be necessarily required, as the critical functions will be supplied by the PMC card on the MVME-2401.